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1991

EPA Superfund
Record of Decision:

FADROWSKI DRUM DISPOSAL
EPA ID: WID980901227
OU 01
FRANKLIN, WI
06/10/1991

(1) CLAY TILL; (2) UNDIFFERENTIATED SAND, GRAVEL, SILT AND CLAY; AND (3) DOLOMITE BEDROCK. THE CLAY TILL UNIT AT THE FDDS IS THE OAK CREEK FORMATION, AND IS A CLAYEY SILT TO SILTY CLAY WITH AN AVERAGE COMPOSITION OF 12 PERCENT SAND, 44 PERCENT SILT, AND 44 PERCENT CLAY. THE CLAY TILL UNIT APPEARS TO BE BETWEEN 80 TO 100 FEET THICK AT THE FDDS, AND APPEARS TO BE CONTINUOUSLY SATURATED UP TO WITHIN 3 TO 10 FEET OF GROUND SURFACE. ALTHOUGH THIS UNIT IS SATURATED, THE SOILS ARE OF SUCH LOW PERMEABILITY THAT THEY WILL NOT SUSTAIN DOMESTIC USE.

THE CLAY IN THE CLAY TILL UNIT HAS BEEN SEPARATED BASED ON COLOR INTO TWO UNITS, THE BROWN AND THE GRAY CLAY. THE BROWN CLAY CONSISTS OF THE UPPER WEATHERED SURFACE OF THE OAK CREEK TILL AND IS A HARD, YELLOW-BROWN LEAN CLAY. THE THICKNESS OF THIS WEATHERED LAYER VARIES ACROSS THE FDDS DUE TO EXCAVATION OF MATERIAL, BUT IS APPROXIMATELY 8 FEET THICK IN THE RELATIVELY UNDISTURBED AREAS OF THE FDDS ALONG THE STREAM. THE GRAY CLAY CONSISTS OF THE UNWEATHERED OAK CREEK TILL AND IS SIMILAR IN COMPOSITION TO THE BROWN CLAY. THE DIFFERENCE IN COLOR IS PROBABLY THE RESULT OF OXIDATION OF THE TILL.

THE UNDIFFERENTIATED SAND, GRAVEL SILT AND CLAY UNIT WAS NOT PENETRATED DURING THIS STUDY; THUS SITE-SPECIFIC INFORMATION REGARDING ITS NATURE AND OCCURRENCE IS NOT AVAILABLE. REVIEW OF WELL CONSTRUCTION REPORTS INDICATE THAT THIS UNIT IS HETEROGENEOUS, BEING COMPRISED OF INTERBEDDED LAYERS OF SAND AND GRAVEL, SILT, AND CLAY. WHERE ADEQUATE THICKNESSES OF SAND AND GRAVEL ARE PRESENT, THIS UNIT WILL YIELD ADEQUATE AMOUNTS OF WATER TO SUPPORT DOMESTIC USE. SEVERAL DOMESTIC WELLS IN THE VICINITY OF THE FDDS ARE COMPLETED WITHIN THIS UNIT.

THE DOLOMITE BEDROCK UNIT ALSO WAS NOT INVESTIGATED AS PART OF THIS STUDY. THE DOLOMITE BEDROCK UNIT IS THE PRIMARY SOURCE OF GROUNDWATER FOR DOMESTIC WELLS IN THE FDDS VICINITY.

A MORE COMPLETE DESCRIPTION OF THE SITE CAN BE FOUND IN THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) REPORTS.

#SHEA

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

BETWEEN 1970 AND 1982, THE FDDS WAS OWNED AND OPERATED BY FADROWSKI AS AN UNREGULATED, UNLICENSED LANDFILL. PURSUANT TO APPLICABLE STATE REGULATIONS, THE OPERATION WOULD HAVE BEEN EXEMPT FROM REGULATION (CHAPTERS NR 151 AND NR 180 OF THE WISCONSIN ADMINISTRATIVE CODE) IF FADROWSKI HAD ONLY DISPOSED OF SOLID WASTE CONSISTING OF CLEAN EARTH FILL, CONTAINING LESS THAN 25 PERCENT BY VOLUME OF BRICK, CONCRETE, AND BUILDING STONE. DURING THE SAME TIMEFRAME, FADROWSKI WAS ALSO THE PRINCIPAL OF A WASTE COLLECTION AND TRANSPORTATION COMPANY CALLED ED'S MASONRY & TRUCKING, INC. (ED'S TRUCKING). ED'S TRUCKING WAS LICENSED BY THE WDNR TO COLLECT AND TRANSPORT NONCOMBUSTIBLE WASTE, WOOD MATTER, REFUSE AND GARBAGE. THE CUSTOMERS OF ED'S TRUCKING CONSISTED OF A WIDE VARIETY OF LOCAL BUSINESSES AND INDUSTRIES, WHICH GENERATED A VARIETY OF WASTES.

A WDNR INSPECTION OF THE FDDS CONDUCTED IN FEBRUARY 1981, DISCLOSED THAT FADROWSKI HAD BEEN DISPOSING OF NON-EXEMPT SOLID WASTE AT THE FDDS WITHOUT A LICENSE. THE WDNR HAD WARNED FADROWSKI THAT HE COULD NOT DISPOSE OF REGULATED SOLID WASTE AT THE FDDS; HOWEVER, FADROWSKI DID NOT APPLY FOR A SOLID WASTE DISPOSAL LICENSE. LATER THAT SAME YEAR, MARCIA SMITH (SMITH), A FORMER EMPLOYEE OF ED'S TRUCKING, TELEPHONED IN A COMPLAINT TO THE WDNR IN WHICH SHE INFORMED THE AGENCY OF HER BELIEF THAT SUBSTANTIAL QUANTITIES OF NON-EXEMPT WASTES WERE BEING DISPOSED OF AT THE FDDS BY FADROWSKI. WDNR EMPLOYEES AGAIN INSPECTED THE FDDS AND FOUND FURTHER EVIDENCE OF NON-EXEMPT SOLID WASTE DISPOSAL, INCLUDING METAL, WOOD, FOUNDRY WASTE, CRUSHED DRUMS AND SLAG-TYPE BOILER WASTE.

LATER IN 1981, THE CITY OF FRANKLIN REQUESTED THAT FADROWSKI PROVIDE A SCHEDULE FOR BRINGING THE FDDS INTO COMPLIANCE WITH THE CITY'S CODE. FADROWSKI DID NOT COMPLY WITH THE CITY CODE REQUIREMENTS.

IN DECEMBER 1982, MENARD, INC. PURCHASED THE FDDS. MENARD ALSO PURCHASED THE TWO OTHER PARCELS ADJACENT TO THE FDDS TO THE NORTH, ON WHICH IT PLANNED TO BUILD ITS STORE. MENARD PLANNED TO USE THE FDDS AS A SOURCE OF FILL MATERIAL TO CHANGE THE GRADES OF THE OTHER PARCELS AND MAKE ALL THREE PROPERTIES SUITABLE FOR COMMERCIAL DEVELOPMENT. EXCAVATION AND GRADING WORK BEGAN IN EARLY MAY 1983. DURING THIS WORK, VARIOUS-SIZED CONTAINERS OF WASTE AND SLUDGES WERE UNCOVERED, AND THEIR CONTENTS INADVERTENTLY RELEASED ON THE PROPERTY AS WORK CONTINUED. THE EXCAVATION PROCESS CONTINUED UNTIL JUNE 28, 1983, WHEN A BULLDOZER OPERATOR RAN OVER A

DRUM CONTAINING AN UNKNOWN LIQUID MATERIAL. THE DRUM WAS RUPTURED AND THE CONTENTS SQUIRTED OUT. THE FRANKLIN FIRE DEPARTMENT WAS NOTIFIED AND IT, IN TURN, CONTACTED THE WDNR. A HAZARDOUS WASTE INVESTIGATOR FOR THE WDNR ARRIVED AT THE FDDS AND SAW SEVERAL DRUMS EXPOSED, ALL OF WHICH WERE CRUSHED TO SOME DEGREE WITH THEIR CONTENTS OOZING OUT. THE WDNR INVESTIGATOR TOOK PICTURES AND SAMPLED THE WASTE AT THE FDDS FOR ANALYSIS BY THE STATE LABORATORY OF HYGIENE.

THE WDNR DIRECTED MENARD TO RETAIN A CONSULTANT TO PERFORM WASTE ANALYSES AND ARRANGE FOR CONTAINMENT AND STORAGE OF EXPOSED WASTE MATERIAL UNTIL IT COULD BE PROPERLY DISPOSED OF. AN ENVIRONMENTAL CONSULTING FIRM RETAINED BY MENARD ARRIVED AT THE FDDS THE NEXT DAY TO COLLECT ADDITIONAL SAMPLES OF THE EXPOSED MATERIALS. SAMPLES WERE COLLECTED AND SPLIT WITH WDNR. DUE TO THE FACT THAT LUGGAR BOXES COULD NOT BE READILY OBTAINED AND PLASTIC COVERING MATERIAL WAS NOT AVAILABLE, PLUS THE FACT THAT RAIN WAS FORECAST FOR THAT EVENING, IT WAS DECIDED THAT ON-SITE CLAY SHOULD BE USED TO CONSTRUCT CONTAINMENT BERMS AND TO COVER SELECTED PORTIONS OF THE EXPOSED WASTE MATERIAL. AREAS OF EXPOSED WASTE ON THE WEST END OF THE EXCAVATION WERE SURROUNDED BY A BERM TO CONTAIN ANY RUNOFF, BUT WAS NOT COVERED BECAUSE OF CONCERNS ABOUT ITS LOCATION AND CONSISTENCY. THE WDNR FELT THE WASTE WOULD BE MORE DIFFICULT TO LOCATE AGAIN, AND THE BERM WAS FELT TO BE ADEQUATE TO CONTAIN THE MATERIAL AND ANY RUNOFF.

THE FOLLOWING MORNING, MENARD ORDERED THE CONTRACTOR TO COVER ALL OF THE EXPOSED WASTE AND WASTE MIXTURES WITH AT LEAST TWO FEET OF CLAY. THE WDNR ARRIVED AT THE FDDS LATER THAT DAY, AND FOUND THAT ALL OF THE PREVIOUSLY EXPOSED WASTE HAD BEEN BURIED ON THE ORDERS OF MENARD, WITHOUT CONSULTING THE WDNR.

THE WDNR ADVISED MENARD THAT IT WAS MENARD'S RESPONSIBILITY TO PROPERLY CHARACTERIZE THE WASTE MATERIAL BY CONDUCTING APPROPRIATE CHEMICAL ANALYSES AND, IF THE WASTE PROVED TO BE HAZARDOUS, ARRANGE FOR THE PROPER DISPOSAL. AFTER BURYING THE WASTES AT THE FDDS; HOWEVER, MENARD DID NOT ALLOW ITS CONSULTANT TO PERFORM THE LABORATORY ANALYSES REQUESTED BY THE WDNR. THE WDNR WAS INFORMED OF MENARD'S ORDERS NOT TO RUN THE CHEMICAL ANALYSES ON THE WASTE SAMPLES AND WDNR AGAIN REQUESTED THAT MENARD HAVE THE ANALYSES PERFORMED. HOWEVER, MENARDS REFUSED TO ANALYZE THE SAMPLES THEY HAD COLLECTED. AS A RESULT, THE ONLY DATA GENERATED ON THE CHARACTERISTICS OR COMPOSITION OF THE EXPOSED WASTE IN 1983 WAS THE DATA GENERATED BY THE STATE LABORATORY OF HYGIENE ON SAMPLES OBTAINED BY WDNR.

INITIAL LABORATORY ANALYSES OF THE WDNR WASTE SAMPLES INDICATED THAT THE DRUM CONTENTS WERE HAZARDOUS, AS DEFINED BY CHAPTER NR 181 OF THE WISCONSIN ADMINISTRATIVE CODE (WAC). SAMPLES CONTAINED HIGH CONCENTRATIONS OF LEAD (32,700 PPM), CHROMIUM (6,800 PPM), THE PESTICIDE DDT (1,450) AND A TRACE OF ARSENIC (LESS THAN 5 PPM). THE SAMPLES WERE ALSO ANALYZED FOR VOLATILE ORGANIC COMPOUNDS (VOCS) AND WERE FOUND TO CONTAIN PETROLEUM-DERIVED HYDROCARBONS, BUT NOT CHLORINATED HYDROCARBONS. IGNITABILITY TEST RESULTS FOR THE WDNR WASTE SAMPLES INDICATED THAT OTHER WASTES SAMPLED AT THE FDDS WERE CHARACTERISTIC HAZARDOUS WASTES BECAUSE THEIR FLASH POINT WAS BELOW 140 DEGREE FAHRENHEIT.

US EPA AND THE STATE OF WISCONSIN SIGNED AN ADMINISTRATIVE ORDER BY CONSENT WITH ACME PRINTING INK COMPANY IN MAY OF 1987. ACME PRINTING INK CONDUCTED THE RI/FS UNDER US EPA AND WDNR SUPERVISION.

#HCP

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

A COMMUNITY RELATIONS PLAN WAS DEVELOPED IN 1987 TO DOCUMENT COMMUNITY CONCERNS AND TO PLAN AN INFORMATION STRATEGY. US EPA HELD FOUR PUBLIC MEETINGS AND ONE INFORMAL AVAILABILITY SESSION TO KEEP THE PUBLIC INFORMED ABOUT THE ACTIVITIES AT THE SITE. US EPA ALSO SENT OUT FACT SHEETS AND LETTERS AT VARIOUS TIMES DURING THE RI/FS PROCESS.

AS PART OF ITS COMMUNITY RELATIONS PROGRAM, US EPA MAINTAINED TWO INFORMATION REPOSITORIES: ONE AT THE FRANKLIN PUBLIC LIBRARY AND THE OTHER AT THE FRANKLIN CITY HALL. BOTH ARE LOCATED AT 9229 WEST LOOMIS ROAD, FRANKLIN, WISCONSIN. ALL FORMAL REPORTS SUBMITTED BY THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) DURING THE FADROWSKI DRUM DISPOSAL RI/FS ARE AVAILABLE AT THESE LOCATIONS. THE REPOSITORIES ALSO CONTAIN DOCUMENTS PREPARED BY US EPA, SUCH AS FACT SHEETS AND THE PROPOSED PLAN, AS WELL AS DOCUMENTS PREPARED BY US EPA'S OVERSIGHT CONTRACTOR.

US EPA NOTIFIED THE LOCAL COMMUNITY, BY WAY OF THE PROPOSED PLAN, OF THE RECOMMENDATION OF A REMEDIAL

ALTERNATIVE FOR THE FDDS. TO ENCOURAGE PUBLIC PARTICIPATION IN THE SELECTION OF A REMEDIAL ALTERNATIVE, US EPA SCHEDULED A PUBLIC COMMENT PERIOD FROM APRIL 8, 1991 TO MAY 8, 1991. ADDITIONALLY, ON APRIL 25, 1991, US EPA HELD A PUBLIC MEETING TO DISCUSS THE RECOMMENDED REMEDIAL ALTERNATIVE AND THE OTHER ALTERNATIVES IDENTIFIED AND EVALUATED IN THE FS. A TRANSCRIPT OF THIS MEETING IS INCLUDED AS PART OF THE ADMINISTRATIVE RECORD FOR THE FADROWSKI DRUM DISPOSAL SITE. US EPA'S RESPONSES TO COMMENTS RECEIVED DURING THIS PUBLIC MEETING AND TO WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD ARE INCLUDED IN THE RESPONSIVENESS SUMMARY WHICH IS ATTACHED TO THIS ROD.

PRESS RELEASES WERE SENT TO BOTH FRANKLIN AND MILWAUKEE, WISCONSIN, MEDIA, AND ADVERTISEMENTS WERE PLACED IN THE MILWAUKEE JOURNAL AND THE FRANKLIN HUB CONCERNING THE PUBLIC MEETING AND COMMENT PERIOD.

#SRRA
4.0 SCOPE AND ROLE OF RESPONSE ACTION

THE SELECTED REMEDY FOR THE FADROWSKI DRUM DISPOSAL SITE IS INTENDED TO BE THE FINAL RESPONSE ACTION AT THE SITE. THE REMEDY WILL COMBINE SOURCE CONTROL, TREATMENT, SITE ACCESS AND LAND-USE RESTRICTIONS, AND LONG-TERM GROUNDWATER MONITORING. IN SUMMARY, THE SELECTED REMEDY WILL INCLUDE THE LIMITED EXCAVATION OF CONTAINERIZED WASTE AND ASSOCIATED CHARACTERISTICALLY HAZARDOUS SOIL FROM THE FILL AREA, GRADING THE SITE IN PREPARATION FOR CAPPING, AND THE INSTALLATION OF AN NR 504.07 CAP. THE REMEDY WILL ALSO REQUIRE FENCING OF THE SITE, THE RESTRICTION OF SITE USE VIA LAND USE RESTRICTIONS, AND LONG-TERM GROUNDWATER AND SURFACE WATER MONITORING. THE COMPONENTS OF THE SELECTED REMEDY ARE DESCRIBED IN GREATER DETAIL IN SECTION 9.0. THIS REMEDY WILL BE SUBJECT TO A REVIEW IN FIVE YEARS SINCE WASTE MATERIAL ABOVE HEALTH-BASED LEVELS WILL BE LEFT ON SITE.

THE EXISTENCE OF BURIED DRUMS HAS BEEN IDENTIFIED AS A PRINCIPAL THREAT WARRANTING TREATMENT. THE CONTENTS AND CONDITION OF THE DRUMS ARE NOT FULLY KNOWN AND THEIR PRESENCE AT THE FDDS CONSTITUTES A POTENTIAL FUTURE THREAT TO HUMAN HEALTH AND THE ENVIRONMENT. THEREFORE, TO THE EXTENT PRACTICABLE, CONTAINERIZED WASTE AND ASSOCIATED CHARACTERISTICALLY HAZARDOUS SOILS WILL BE EXCAVATED FROM THE SITE, TREATED, AND MANAGED IN ACCORDANCE WITH WISCONSIN WASTE MANAGEMENT GUIDELINES AND FEDERAL LAND DISPOSAL RESTRICTIONS. THE LEVEL OF CONTAMINATION REMAINING ON SITE AFTER REMOVAL OF CONTAINERIZED WASTES AND ASSOCIATED CHARACTERISTIC HAZARDOUS SOILS CAN BE RELIABLY CONTROLLED OVER TIME THROUGH ENGINEERING AND INSTITUTIONAL CONTROLS.

DURING THE GROUNDWATER MONITORING PROGRAM, IF IT IS SHOWN THAT THE GROUNDWATER CONDITIONS BECOME WORSE OR DO NOT IMPROVE OVER A REASONABLE PERIOD OF TIME, US EPA MAY EVALUATE OPTIONS FOR A GROUNDWATER TREATMENT PROGRAM.

#SSC
5.0 SUMMARY OF SITE CHARACTERISTICS

SEE APPENDIX A FOR RANGES OF CONTAMINANTS FOUND IN EACH MEDIA.

GROUNDWATER

GROUNDWATER IN THE CLAY TILL UNIT FLOWS TO THE WEST AT THE FDDS. THE WATER TABLE IS BETWEEN 3 AND 10 FEET BELOW GROUND SURFACE. WATER IN THE LOWER DOLOMITE AQUIFER FLOWS GENERALLY EASTWARD TOWARDS LAKE MICHIGAN. GROUNDWATER FLOW IN THE UNDIFFERENTIATED SAND, GRAVEL, SILT AND CLAY UNIT AND IN THE DOLOMITE BEDROCK IS GENERALLY EASTWARD TOWARDS LAKE MICHIGAN.

THE CLAY TILL UNIT DESCRIBED IN SECTION 1.0 APPEARS TO BE CONTINUOUSLY SATURATED UP TO WITHIN 3 TO 10 FEET OF GROUND SURFACE BASED ON OBSERVATIONS COLLECTED DURING THE RI. ALTHOUGH THE UNIT IS SATURATED, IN-FIELD PERMEABILITY TESTING SHOW THAT THE CLAY HAS A RELATIVELY LOW PERMEABILITY. THE CALCULATED HYDRAULIC CONDUCTIVITIES RANGED FROM BETWEEN 2.1 X (10-5) CM/SEC AND 3.1 X (10-7) CM/SEC AND BETWEEN 4.6 X (10-6) CM/SEC AND 6.2 X (10-8) CM/SEC USING THE HVORSLEV METHOD. HORIZONTAL GROUNDWATER FLOW IN THE CLAY TILL AT THE FDDS IS TO THE WEST TOWARDS THE MAN-MADE POND AND THE STREAM. HORIZONTAL HYDRAULIC GRADIENTS ARE QUITE VARIABLE ACROSS THE FDDS, DUE TO CHANGES IN TOPOGRAPHY. CALCULATED HORIZONTAL GRADIENTS GENERALLY RANGED BETWEEN 0.01 AND 0.06 FEET/FEET. VERTICAL HYDRAULIC GRADIENTS AT THE FDDS ARE DOWNWARD AND VARIED BETWEEN 0.02 AND 0.55 FEET/FEET. THE AVERAGE LINEAR VELOCITIES AT THE FDDS WERE CALCULATED TO BE 1.9 X (10-7) CM/SEC

ASSUMING AN AVERAGE HORIZONTAL HYDRAULIC GRADIENT OF 0.02 AND 2.6 X (10-6) ASSUMING AN AVERAGE VERTICAL HYDRAULIC GRADIENT OF 0.28.

ALTHOUGH THERE WERE VERY FEW INORGANIC OR ORGANIC COMPOUNDS OBSERVED AT ELEVATED LEVELS IN GROUNDWATER AT THE FDDS, THE GROUNDWATER IN THE CLAY TILL UNIT WAS FOUND TO BE IMPACTED BY THE CONTAMINATION AT THE FDDS. CYANIDE (MAX. 67 PPB), CHROMIUM (MAX. 13 PPB) AND BARIUM (MAX. 273 PPB) WERE FOUND IN GROUNDWATER THROUGHOUT THE CLAY TILL AT LEVELS EXCEEDING WISCONSIN PREVENTIVE ACTION LIMITS (PALS). BENZENE WAS FOUND ABOVE THE PAL AT 3 PPB AT WELL P-2 DURING THE FIRST ROUND OF SAMPLING, BUT WAS NOT FOUND DURING THE SECOND ROUND. MERCURY WAS DETECTED AT 2.3 PPB IN WELL P-3 DURING THE FIRST ROUND OF SAMPLING, BUT WAS NOT FOUND DURING THE SECOND ROUND. THE LEVEL OF MERCURY DETECTED AT THE SITE EXCEEDED WISCONSIN ENFORCEMENT STANDARDS (ESS).

SURFACE WATER/SEDIMENTS

SURFACE WATER EXISTS ON SITE IN THE FORM OF A MAN-MADE POND IN THE WEST-CENTRAL PART OF THE FDDS. THE POND INTERCEPTS MOST OF THE SURFACE WATER RUNOFF FROM THE FDDS AND ALSO RECEIVES GROUNDWATER DISCHARGE FROM THE FDDS. THERE WERE NO ORGANIC COMPOUNDS DETECTED IN THE SURFACE WATER OF THE POND. CYANIDE LEVELS APPEAR TO BE ELEVATED DUE TO CONTRIBUTIONS FROM THE FDDS WITH LEVELS OF 40 UG/L AND 47 UG/L (DUPLICATE).

SURFACE WATER ALSO EXISTS ON SITE IN THE FORM OF A STREAM ON THE WESTERN BOUNDARY OF THE FDDS. THERE WERE LOW LEVELS OF VOCS DETECTED IN THE UNNAMED STREAM. THE DOWNSTREAM SAMPLE CONTAINED ETHYLBENZENE AND XYLENES. HOWEVER, NEITHER OF THESE COMPOUNDS WERE DETECTED ON SITE. CYANIDE LEVELS WERE ELEVATED BOTH UPSTREAM (28 UG/L) AND DOWNSTREAM (36 UG/L). MERCURY WAS FOUND DOWNSTREAM AT A LEVEL OF 0.2 UG/L AND WAS NOT DETECTED UPSTREAM. NO SEMI-VOLATILES, PESTICIDES OR POLYCHLORINATED BIPHENYLS (PCBS) WERE DETECTED IN STREAM SAMPLES.

SEDIMENTS WERE COLLECTED FROM THE ON-SITE POND. ACETONE WAS THE ONLY VOC DETECTED IN THE SEDIMENTS. THE DETECTION OF ACETONE IS ACKNOWLEDGED AS A PROBABLE LABORATORY ARTIFACT, BECAUSE NO ACETONE WAS DETECTED IN ASSOCIATED SURFACE WATER SAMPLES. SEDIMENT ANALYZED FROM THE POND DID NOT DETECT ANY POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS). SEDIMENT FROM A DRAINAGE-SWALE AREA TO THE SOUTHEAST OF THE POND WAS ANALYZED AND FOUND TO CONTAIN 3,840 UG/KG TOTAL PAHS. HOWEVER, THIS DRAINAGE-SWALE SAMPLE POINT IS ON PROPERTY ADJOINING THE FDDS AND IS NOW UNDER APPROXIMATELY 10 TO 15 FEET OF FILL.

SEDIMENTS FROM THE UNNAMED STREAM CONTAINED SEVERAL ORGANIC COMPOUNDS (MOSTLY SEMI-VOLATILES). MANY SEMI-VOLATILES WERE DETECTED IN THE UPSTREAM SAMPLES, BUT THE HIGHEST CONCENTRATIONS WERE DETECTED IN THE DOWNSTREAM SAMPLE. SURFACE RUNOFF OR SEEPS FROM THE PRIMARY FILL PILE MAY BE IMPACTING DOWNSTREAM SEDIMENTS IN THE STREAM. TOTAL PAHS DOWNSTREAM (2,350 UG/KG) ARE APPROXIMATELY FIVE TIMES THOSE UPSTREAM (490 UG/KG). SEVERAL METALS, INCLUDING ALUMINUM, BARIUM, BERYLLIUM, CALCIUM, LEAD AND MAGNESIUM HAD SLIGHTLY ELEVATED DOWNSTREAM LEVELS.

SURFACE SOIL/SUBSURFACE SOIL

ONE SURFACE SOIL SAMPLE WAS COLLECTED AT THE BASE OF THE WESTERN SLOPE OF THE PRIMARY FILL PILE ON THE SOUTH-CENTRAL PART OF THE FDDS. THE ORGANIC AND INORGANIC CHARACTER OF THIS SAMPLE IS SIMILAR TO THE CHARACTER OF THE SUBSURFACE SOIL SAMPLES COLLECTED ON SITE. PAHS WERE DETECTED FREQUENTLY AND AT THE HIGHEST CONCENTRATIONS OF ORGANICS (TOTAL PAHS 10,290 UG/KG). IT APPEARS RUNOFF OR SEEPS FROM THE FILL PILE MAY BE IMPACTING SURFACE SOIL ADJACENT TO THE FILL AND WEST TO THE UNNAMED STREAM.

SUBSURFACE SOILS WERE COLLECTED PREDOMINANTLY FROM THE AREA CONTAINING CONSTRUCTION AND DEMOLITION DEBRIS MIXED WITH NATIVE CLAY. TOLUENE WAS THE PREDOMINANT VOC DETECTED IN FILL SAMPLES AND WAS FOUND IN LEVELS RANGING FROM 34 UG/KG TO 1,800 UG/KG. TOLUENE WAS DETECTED IN EACH FILL SAMPLE AND IS LIKELY FROM ON-SITE SOURCES. THE PAH GROUP OF SEMI-VOLATILES WERE DETECTED FREQUENTLY AND AT THE HIGHEST CONCENTRATIONS OF SEMI-VOLATILES. THE MAXIMUM TOTAL PAHS FOUND WAS 24,300 UG/KG. PAHS ARE COMMONLY ASSOCIATED WITH COAL TARS. FOUNDRY SAND ENCOUNTERED IN THE TEST PITS WAS ANALYZED AND ALSO CONTAINED PAHS.

TEST PITS

TEST PIT EXCAVATIONS WERE PERFORMED MAINLY IN AREAS CONTAINING A MIXTURE OF CONSTRUCTION DEBRIS AND NATIVE SOIL. THE CHEMICAL CHARACTER OF THE FILL MATERIAL IS SIMILAR TO THAT OF THE SUBSURFACE SOIL BORINGS. TOLUENE

WAS THE VOC DETECTED MOST FREQUENTLY, WITH CONCENTRATIONS RANGING FROM 29 UG/KG TO 240 UG/KG. SEVERAL OTHER VOCS WERE DETECTED IN TEST PIT SAMPLES, BUT AT LOWER CONCENTRATIONS THAN TOLUENE. PAHS WERE THE MOST FREQUENTLY DETECTED SEMI-VOLATILES, WITH TOTAL PAHS RANGING FROM 1,100 UG/KG TO 180,000 UG/KG. LEVELS OF 4,4-DDT AND ITS ASSOCIATED DEGRADATION PRODUCTS WERE FOUND IN SEVERAL TEST PITS AT CONCENTRATIONS RANGING FROM 120 UG/KG TO 310 UG/KG. THE PCB AROCLOR 1254 WAS DETECTED IN THREE OF SEVEN TEST PITS, WITH A MAXIMUM CONCENTRATION FOUND OF 1,900 UG/KG. A LARGE NUMBER OF INORGANIC ELEMENTS WERE DETECTED IN TEST PITS AT CONCENTRATIONS EXCEEDING BASELINE CONCENTRATIONS. TOTAL CYANIDE WAS DETECTED IN ONE TEST PIT AT 6,360 UG/KG, WITH THE RESULTS FROM THE OTHER TEST PITS CONSIDERED UNUSABLE DUE TO MATRIX PROBLEMS.

THERE WERE NO ANALYTICAL SAMPLES COLLECTED FROM THE CONTAINERIZED WASTE AND SLUDGE LOCATED IN THE PRIMARY FILL PILE ON THE SOUTH-CENTRAL PART OF THE FDDS. KNOWLEDGE OF DRUM CONTENTS IS LIMITED TO INFORMATION GATHERED BY THE WDNR PREVIOUS TO THE RI. WDNR RESULTS REVEALED DRUMS CONTAINING HIGH CONCENTRATIONS OF DDT (1,450 PPM), CHROMIUM (6,800 PPM), LEAD (32,700 PPM) AND LOW LEVELS OF ARSENIC (LESS THAN 5 PPM). THE SAMPLES WERE ALSO ANALYZED FOR VOCS AND WERE FOUND TO CONTAIN PETROLEUM-DERIVED HYDROCARBONS, BUT NOT CHLORINATED HYDROCARBONS. THE DRUM CONTENTS WERE IDENTIFIED AS CHARACTERISTIC HAZARDOUS WASTE DUE TO THEIR TOXICITY AND BECAUSE IGNITABILITY TESTS REVEALED THAT THEIR FLASH POINTS WERE BELOW 140 DEGREE FAHRENHEIT. INFORMATION GATHERED FOR LITIGATION SUGGESTS THAT ADDITIONAL CONTAINERIZED WASTE, WITH DISTINCT CHEMICAL PROFILES, COULD ALSO BE BURIED AT THE SITE.

#SSR
6.0 SUMMARY OF SITE RISKS

IN ACCORDANCE WITH THE ADMINISTRATIVE ORDER BY CONSENT, THE PRPS PREPARED THE BASELINE RISK ASSESSMENT DURING THE RI/FS. THIS ASSESSMENT, CALLED AN ENDANGERMENT ASSESSMENT IN THE RI REPORT (CHAPTER 8), FOLLOWED THE GUIDANCE PROVIDED IN US EPA'S RISK ASSESSMENT GUIDANCE FOR SUPERFUND (RAGS): VOLUME I, HUMAN HEALTH EVALUATION MANUAL.

AFTER EVALUATING POTENTIAL CURRENT AND FUTURE EXPOSURE PATHWAYS AT THE SITE, THREE EXPOSURE SCENARIOS WERE CHOSEN TO REPRESENT POSSIBLE RISKS POSED BY THE SITE. ONE CONSIDERS CURRENT SITE CONDITIONS, AND TWO ASSUME HYPOTHETICAL FUTURE SITE CONDITIONS. THESE EXPOSURE SCENARIOS ARE:

1. TRESPASSER SCENARIO: A TRESPASSER WOULD BE EXPOSED TO CONTAMINATED SURFACE SOILS, SEDIMENT AND SURFACE WATER CURRENTLY ON SITE VIA INGESTION AND DERMAL ABSORPTION. THIS SCENARIO ASSUMED THAT A CHILD (AGE 5-15) WOULD TRESPASS TWICE A WEEK, EIGHT MONTHS/YEAR, FOR 10 YEARS.

2. GROUNDWATER SCENARIO: CHILDREN LIVING ON-SITE WOULD DRINK CONTAMINATED WATER FROM A PRIVATE WELL AND COME IN CONTACT WITH CONTAMINATED FILL MATERIAL. IT IS ASSUMED THAT THE CHILD (AGE 1 TO AGE 21) WOULD LIVE IN THE RESIDENCE AND BE EXPOSED TO CONTAMINANTS FOR 21 YEARS. ALTHOUGH THIS LENGTH OF EXPOSURE IS SLIGHTLY SHORTER THAN THE 30 YEARS RECOMMENDED BY RAGS, THE BODY MASS WAS TIME-WEIGHTED TO ESTIMATE A CHILD'S WEIGHT. THIS ENSURED THAT THE EXPOSURE SCENARIO WOULD BE MORE CONSERVATIVE THAN THE 30 YEARS OF EXPOSURE AT 70 KG ORDINARILY ESTIMATED FOR ADULTS. IN ADDITION, THE SCENARIO IS EXTREMELY CONSERVATIVE IN THAT IT ASSUMED THE MOST CONTAMINATED WATER FROM AN AQUITARD WAS USED FOR RESIDENTIAL PURPOSES, ALTHOUGH THE AQUITARD ITSELF WOULD NOT EVEN SUPPORT RESIDENTIAL USE.

3. CONSTRUCTION WORKER SCENARIO: FUTURE CONSTRUCTION WORKERS WOULD BUILD ON THE SITE AND WOULD BE EXPOSED DIRECTLY TO WASTE VIA INGESTION, DERMAL ABSORPTION, AND INHALATION OF FUGITIVE DUST AND VOCS. THIS SCENARIO ASSUMED THAT A WORKER WOULD BE EXPOSED EIGHT HOURS/DAY, FIVE DAYS/WEEK, FOR EIGHT MONTHS. THIS FUTURE RISK SCENARIO IS ONE OF THE MOST LIKELY, SINCE THIS SITE WAS PURCHASED FOR COMMERCIAL DEVELOPMENT.

USING THESE SCENARIOS, RISK NUMBERS ARE CALCULATED FOR EACH CONTAMINANT. THESE CALCULATIONS FACTOR IN THE AMOUNT OF EXPOSURE ASSUMED, THE DOSE OF THE CHEMICAL RECEIVED (BASED ON THE CONCENTRATIONS FOUND DURING THE RI), AND A CONSTANT SET FOR EACH INDIVIDUAL CHEMICAL WHICH QUANTIFIES THE TOXICITY OF THAT CHEMICAL. DIFFERENT CONSTANTS AND EQUATIONS ARE USED BASED ON WHETHER OR NOT THE CHEMICAL IS CARCINOGENIC. THE CONSTANT FOR A CARCINOGENIC CHEMICAL IS CALLED A SLOPE FACTOR, AND THE CONSTANT FOR A NONCARCINOGEN IS CALLED A REFERENCE DOSE.

THE RESULTS OF THESE CALCULATIONS ARE ESTIMATES OF CANCER RISK FOR CARCINOGENIC RISKS AND ESTIMATES OF HAZARD

INDICES FOR NONCARCINOGENIC RISKS. THE CANCER RISK NUMBER IS EXPRESSED IN SCIENTIFIC NOTATION AND REPRESENTS AN ESTIMATE OF THE INCREASED RISK OF GETTING CANCER. FOR EXAMPLE, 1.0 X (10-6) REPRESENTS A RISK OF ONE ADDITIONAL CASE OF CANCER PER 1 MILLION PEOPLE, UNDER THE EXPOSURE CONDITIONS ASSUMED. US EPA CONSIDERS THIS 1.0 X (10-6) NUMBER AS A POINT OF DEPARTURE WHEN DETERMINING RISK AT A SITE. RISKS CALCULATED TO BE LESS THAN THIS VALUE ARE CONSIDERED PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, WHILE RISKS BETWEEN 1.0 X (10-4) AND 1.0 X (10-6) ARE WITHIN A RANGE ACCEPTABLE TO US EPA BUT MAY NOT BE CONSIDERED PROTECTIVE DUE TO SITE-SPECIFIC CONDITIONS. RISKS GREATER THAN 1.0 X (10-4) ARE UNACCEPTABLE.

THE HAZARD INDEX (HI) REPRESENTS THE RISK OF ADVERSE EFFECTS OCCURRING DUE TO EXPOSURE TO THE SITE. THE HI NUMBER GENERATED IS INTERPRETED DIFFERENTLY THAN THE CANCER RISK NUMBER. TO EVALUATE RISK AT A SITE DUE TO NONCARCINOGENIC CONTAMINANTS, US EPA HAS DETERMINED THAT A HAZARD INDEX LESS THAN 1 ESTIMATES THAT NO ADVERSE EFFECTS WILL OCCUR DUE TO THE HYPOTHETICAL EXPOSURE, WHILE A HAZARD INDEX GREATER THAN 1 ESTIMATES THAT ADVERSE EFFECTS DUE TO SITE EXPOSURE MAY OCCUR AND IS NOT PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

TABLE 1 SUMMARIZES THE CANCER RISK NUMBERS AND HI VALUES CALCULATED FOR EACH CHEMICAL UNDER THE CURRENT LAND-USE SCENARIO. TABLE 2 SUMMARIZES FUTURE RESIDENTIAL RISK AND HAZARD INDEX VALUES AND TABLE 3 SUMMARIZES THE FUTURE CONSTRUCTION WORKER SCENARIO. THE NUMBERS LISTED IN THESE TABLES REPRESENT THE MAXIMUM EXPOSURE CONDITIONS BY USING THE GREATEST CONCENTRATION OF A CHEMICAL FOUND IN EACH MEDIA OR THE 95 PERCENT UPPER-BOUND CONFIDENCE LIMIT OF THE ARITHMETIC MEAN. THE CUMULATIVE RISK FOR EACH SCENARIO IS INCLUDED BENEATH EACH TABLE.

IN SUMMARY, THE RISK ASSESSMENT HIGHLIGHTS TWO POTENTIAL FUTURE RISKS AT THE SITE (REFER TO TABLES 1, 2 AND 3):

1. A POSSIBLE CARCINOGENIC RISK OF 4.5 X (10-6) UNDER THE CURRENT SCENARIO FOR CHILDREN TRESPASSING ON THE SITE AND SWIMMING IN THE POND;

2. A POSSIBLE CARCINOGENIC RISK OF 1.3 X (10-5) UNDER THE FUTURE RESIDENTIAL SCENARIO FOR CHILDREN WHO WOULD LIVE AND PLAY AT THE SITE FOR 21 YEARS. THIS INCLUDES A 1 X (10-6) RISK FROM CONSUMPTION OF CONTAMINATED WATER FROM THE AQUITARD;

3. A POSSIBLE CARCINOGENIC RISK OF 9.7 X (10-7) UNDER THE FUTURE SCENARIO FOR CONSTRUCTION WORKERS ON SITE FIVE DAYS A WEEK FOR EIGHT MONTHS.

WHILE US EPA REVIEW OF THE RI DETERMINED THAT THE RISK ASSESSMENT ADEQUATELY EVALUATES EXPOSURE TO LOW-LEVEL CONTAMINATION FOUND IN SOILS, SEDIMENTS, SURFACE WATER AND GROUNDWATER, THE RISK ASSESSMENT FAILED TO EVALUATE POSSIBLE CONTACT WITH THE PRINCIPAL THREAT, CONCENTRATED CONTAINERIZED WASTE BURIED AT THE SITE. WHILE IT IS DIFFICULT TO EVALUATE THESE RISKS BECAUSE OF DATA COLLECTION OMISSIONS CONCERNING THE CONTENTS OF DRUMS FOUND DURING THE RI AND UNCERTAINTIES SURROUNDING NUMBERS OF DRUMS BURIED AT THE SITE, THE US EPA REGION V OFFICE OF HEALTH AND ENVIRONMENTAL ASSESSMENT HAS APPROXIMATED THE WORST CASE RISKS FROM EXPOSURE TO DRUM CONTENTS FOR RESIDENTIAL AND CONSTRUCTION WORKER SCENARIOS. ITS EVALUATION USED WDNR SAMPLING RESULTS FROM 1983, WHEN MENARD, INC. BEGAN CONSTRUCTION OF MENARD'S HOME IMPROVEMENT CENTER AND ORIGINALLY UNCOVERED BURIED DRUMS. THE EVALUATION FOUND THAT:

1. SHOULD THE SITE BE DEVELOPED RESIDENTIALLY AND, FOR SOME REASON, CONTAINERIZED WASTE IS EXPOSED AT THE SURFACE, THE RISK FROM A CHILD LIVING AND PLAYING AT THE SITE FOR 21 YEARS WOULD EXCEED 1 X (10-4).

2. THE HAZARD INDEX FROM POSSIBLE FUTURE RESIDENTIAL CONTACT WITH CONTAINERIZED WASTE EXCEEDS 100.

3. UNDER THE FUTURE SCENARIO, RISKS TO CONSTRUCTION WORKERS WHO WOULD WORK IN THE SOIL AND COME INTO CONTACT WITH CONTAINERIZED WASTE FIVE DAYS A WEEK FOR EIGHT MONTHS WOULD INCREASE THEIR CANCER RISK BY GREATER THAN 1 X (10-4).

4. THE HAZARD INDEX FROM POSSIBLE FUTURE CONTACT UNDER A CONSTRUCTION WORKER SCENARIO EXCEEDS 100.

6.1 UNCERTAINTIES

SINCE IT IS UNKNOWN HOW MANY DRUMS OF WASTE ARE BURIED AT THE SITE, THERE IS SIGNIFICANT UNCERTAINTY CONCERNING THE MAGNITUDE OF THE THREAT POSED TO PUBLIC HEALTH AND THE ENVIRONMENT. IN ADDITION, UNCERTAINTIES CONCERNING DRUM CONTENTS RESULT IN AN UNQUANTIFIABLE EXPLOSIVE RISK IF THE SITE WERE TO BE SIGNIFICANTLY DISTURBED.

ALTHOUGH HISTORICAL DATA IS USUALLY NOT CONSIDERED IN ASSESSING RISKS, BECAUSE THE PRESENCE OF BURIED DRUMS AT THE SITE CONSTITUTES AN IMMINENT THREAT TO PUBLIC HEALTH AND THE ENVIRONMENT, US EPA DETERMINED THAT IT IS APPROPRIATE TO CONSIDER THIS DATA.

THE RISK ASSESSMENT ALSO COULD NOT QUANTIFY RISKS FROM THOSE CONTAMINANTS WITHOUT KNOWN SLOPE FACTORS OR REFERENCE FACTORS. THERE IS ALSO NO METHOD AVAILABLE TO QUANTIFY RISKS AND POSSIBLE SYNERGISTIC EFFECTS DUE TO EXPOSURE TO MULTIPLE CONTAMINANTS.

6.2 ENVIRONMENTAL RISKS

APPROXIMATELY NINE ACRES OF WETLANDS ARE LOCATED ON THE WEST SIDE OF THE MAN-MADE POND AT THE FDDS. NO THREATENED OR ENDANGERED SPECIES WERE IDENTIFIED IN THE AREA AFFECTED BY CONTAMINATION AT THE SITE.

LEVELS OF CYANIDE IN THE SURFACE WATER AT THE SITE EXCEED CLEAN WATER ACT AMBIENT WATER QUALITY CRITERIA FOR THE PROTECTION OF AQUATIC LIFE.

CYANIDE WAS FOUND IN THE POND AND IN BOTH UPSTREAM AND DOWNSTREAM SAMPLES OF THE UNNAMED STREAM. ALTHOUGH CYANIDE WAS FOUND UPSTREAM OF THE SITE, ITS PRESENCE IN THE POND AND IN SITE GROUNDWATER SUGGESTS THAT THE SITE IS CONTRIBUTING TO THE CONTAMINATION OF THE STREAM. WITH THE INEVITABLE DEGRADATION OF DRUMMED WASTE BURIED AT THE SITE, THE POND, THE STREAM AND THE WETLANDS ARE AT SIGNIFICANT RISK FOR LARGE INCREASES IN CONTAMINANT LOADING SHOULD RELEASES OF CONCENTRATED WASTE OCCUR. LEAD, CHROMIUM, AND DDT WERE IDENTIFIED IN DRUMS ON SITE AND THEIR RELEASE COULD IMPACT THE HEALTH OF PLANT AND ANIMAL SPECIES LIVING AT AND NEAR THE SITE.

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT.

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7.0 DESCRIPTION OF ALTERNATIVES

SIX ALTERNATIVES WERE DEVELOPED DURING THE ALTERNATIVES ARRAY AND FS STAGE OF THE PROJECT. BASED ON THE LEVELS OF CONTAMINANTS DETECTED IN THE GROUNDWATER AND THE LIMITED EXTENT OF GROUNDWATER CONTAMINATION, NO GROUNDWATER ALTERNATIVES WERE AMONG THE SIX ALTERNATIVES. THE ALTERNATIVES EVALUATED IN THE FS REPORT ARE SOURCE-CONTROL ACTIONS WHICH RELY ON NATURAL ATTENUATION TO REMEDY THE GROUNDWATER CONTAMINATION. THE REMEDIATION GOALS ARE TO:

- TREAT THE PRINCIPAL THREAT (CONTAINERIZED WASTE) TO THE EXTENT PRACTICABLE;
- REDUCE THE THREAT OF DIRECT CONTACT WITH THE WASTE;
- REDUCE THE INFILTRATION OF WATER INTO THE WASTE WHICH MIGHT LEAD TO FURTHER GROUNDWATER CONTAMINATION;
- REDUCE CONTAMINATION TO SURFACE WATERS ON SITE; AND
- ACHIEVE PALS WHERE TECHNICALLY AND ECONOMICALLY FEASIBLE.

THE SIX ALTERNATIVES ARE SUMMARIZED IN TABLE 4 AND ARE DESCRIBED IN GREATER DETAIL IN THE TEXT WHICH FOLLOWS. THE MAJOR APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) WHICH WERE IDENTIFIED FOR THESE ALTERNATIVES WILL BE DISCUSSED IN SECTION 8.0 - COMPARATIVE ANALYSIS OF ALTERNATIVES, UNDER COMPLIANCE WITH ARARS.

ALTERNATIVE 1: NO ACTION

THE NCP REQUIRES THAT US EPA EVALUATE A NO-ACTION ALTERNATIVE. IT IS USED AS A BASIS OF COMPARISON DURING THE EVALUATION OF OTHER ALTERNATIVES. UNDER THIS ALTERNATIVE, US EPA WOULD TAKE NO FURTHER ACTION AT THE SITE TO MONITOR, CONTROL, TREAT, OR OTHERWISE CLEAN UP CONTAMINATION. THE COST OF THIS ALTERNATIVE IS ZERO. HOWEVER, SINCE WASTE WOULD BE LEFT ON SITE, A FIVE-YEAR REVIEW OF CONDITIONS AT THE SITE WOULD BE REQUIRED.

THIS ALTERNATIVE WOULD NOT REDUCE THE THREAT OF DIRECT CONTACT WITH THE WASTE OR REDUCE THE INFILTRATION OF WATER INTO THE CONTAMINATED FILL AREA. THIS ALTERNATIVE WAS NOT FOUND TO BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

ALTERNATIVE 2: INSTITUTIONAL CONTROLS

UNDER THIS ALTERNATIVE, US EPA WOULD TAKE NO ACTION TO ADDRESS CONTAMINATION AT THE SITE. THE ALTERNATIVE RELIES ON ACCESS RESTRICTIONS AND MONITORING TO REDUCE RISKS AT THE SITE. THE ALTERNATIVE WOULD INCLUDE CONSTRUCTION OF A FENCE AROUND THE SITE TO PREVENT SITE ACCESS. RESTRICTIONS WOULD ALSO BE PLACED ON THE PROPERTY DEED TO CONTROL FUTURE USE OF THE SITE. IN ADDITION, ALTERNATIVE 2 INCLUDES A 30-YEAR GROUNDWATER AND SURFACE WATER MONITORING PROGRAM.

THIS ALTERNATIVE WAS NOT FOUND TO BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND THEREFORE WILL NOT BE CARRIED FORWARD FOR FURTHER EVALUATION.

ALTERNATIVE 3: CONTAINMENT

UNDER THIS ALTERNATIVE, ONE OF TWO CAP SYSTEMS WOULD BE INSTALLED OVER THE WASTE AT THE SITE. DESCRIPTIONS OF THE CAPS ARE PROVIDED BELOW:

CAP A: THIS CAP IS A SOLID WASTE LANDFILL CAP WHICH WOULD MEET RCRA SUBTITLE D CLOSURE REQUIREMENTS. SOLID WASTE LANDFILL CLOSURE REQUIREMENTS ARE MORE SPECIFICALLY DEFINED IN WISCONSIN IN NR 504.07 WAC. THE COMPONENTS OF AN NR 504 CAP, FROM BOTTOM TO TOP, ARE 2 FEET OF CLAY, A LAYER OF SOIL 1.5-2.5 FEET THICK, AND 6 INCHES OF TOPSOIL.

CAP B: THIS CAP IS A HAZARDOUS WASTE LANDFILL CAP WHICH WOULD MEET RCRA LANDFILL CLOSURE REGULATIONS AND RCRA GUIDANCE FOR DESIGN OF SUBTITLE C CLOSURE. THE CAP WOULD CONSIST OF, FROM BOTTOM TO TOP, 2 FEET OF COMPACTED CLAY, AN IMPERMEABLE SYNTHETIC MEMBRANE, A 1 FOOT DRAINAGE LAYER, AND 2 FEET OF VEGETATIVE COVER.

BOTH CAPS WOULD PROVIDE A BARRIER BETWEEN THE GROUND SURFACE AND THE WASTE TO PREVENT DIRECT CONTACT. EACH CAP ALSO REQUIRES A HYDRAULIC CONDUCTIVITY IN THE LOW PERMEABILITY LAYER OF NOT MORE THAN 1 X (10-7), WHICH WOULD LIMIT WATER INFILTRATION.

A LEACHATE COLLECTION TRENCH WOULD ALSO BE CONSTRUCTED AS PART OF THE CAP. THE TRENCH WOULD SERVE AS A MEANS TO MONITOR CAP EFFECTIVENESS AND WOULD INCLUDE THE CAPACITY TO STORE AND REMOVE ANY COLLECTED LIQUIDS SHOULD THE LIQUIDS BE CONTAMINATED. IF WISCONSIN PALS ARE EXCEEDED, LEACHATE WOULD BE DISPOSED OF APPROPRIATELY TO A POTW OR RCRA TREATMENT FACILITY.

ALTHOUGH NOT IN A REGULATORY FLOODPLAIN, THE 100-YEAR FLOOD ELEVATION WOULD REACH THE TOE OF THE CONTAINMENT. TO COMPLY WITH RELEVANT AND APPROPRIATE FLOODPLAIN REQUIREMENTS, THE TOE OF THE CONTAINMENT WOULD BE ARMORED TO PREVENT WASHOUT.

OTHER COMPONENTS OF THIS ALTERNATIVE ARE INSTALLATION OF A FENCE AROUND THE SITE, INSTITUTIONAL CONTROLS, AND A PROGRAM TO MONITOR GROUNDWATER, SURFACE WATER AND THE PERFORMANCE OF THE CAP.

TIME TO IMPLEMENT: ONE CONSTRUCTION SEASON (SPRING, SUMMER, FALL)

ESTIMATED COST:

CAP A - CAPITAL: $ 1.7 MILLION

	O&M:	$ 32,100 PER YEAR
	PRESENT NET WORTH:	$ 2.0 MILLION
CAP B -	CAPITAL:	$ 3.6 MILLION
	O&M:	$ 32,100 PER YEAR
	PRESENT NET WORTH:	$ 3.9 MILLION

ALTERNATIVE 4: EXCAVATION OF DRUMS AND CONTAMINATED SOIL & DEBRIS

THE ENTIRE FILL AREA OF THE FDDS WOULD BE EXCAVATED TO MEET A RISK-BASED CLEANUP LEVEL OF 1 X (10-6), OR BACKGROUND, (WHICHEVER IS GREATER). THIS ALTERNATIVE WOULD CONSTITUTE "CLEAN CLOSURE" OF THE SITE. ALL CHARACTERISTICALLY HAZARDOUS WASTE MATERIAL WOULD BE REMOVED AND MANAGED IN ACCORDANCE WITH FEDERAL LAND DISPOSAL RESTRICTIONS AND WISCONSIN WASTE MANAGEMENT GUIDELINES. OTHER COMPONENTS OF THIS ALTERNATIVE ARE FENCING DURING THE EXCAVATION PROGRAM, INSTITUTIONAL CONTROLS TO LIMIT FUTURE SITE USE AND A 30- YEAR PROGRAM TO MONITOR GROUNDWATER AND SURFACE WATER. THE COSTS PRESENTED BELOW ASSUME THAT 100 DRUMS CONTAINING HAZARDOUS MATERIALS AND 25 CUBIC YARDS OF CHARACTERISTICALLY HAZARDOUS SOILS WOULD BE EXCAVATED AND INCINERATED OFF SITE. THE COSTS ASSUME THAT 142,000 CUBIC YARDS OF SOIL WITH LOW LEVELS OF CONTAMINATION WOULD BE REMOVED AND DISPOSED OF OFF SITE AT A SOLID WASTE LANDFILL.

THIS ALTERNATIVE WILL EFFECTIVELY REMOVE THE SOURCE OF CONTAMINATION, THUS ELIMINATING THE DIRECT CONTACT THREAT AND THE CAUSE OF GROUNDWATER CONTAMINATION.

TIME TO IMPLEMENT: ONE CONSTRUCTION SEASON

ESTIMATED COST:

CAPITAL:	$ 11.2 MILLION
O&M:	$ 22,700
PRESENT NET WORTH:	$ 11.4 MILLION

REMOVAL OF ADDITIONAL MATERIAL WOULD INCREASE COSTS BY APPROXIMATELY $1,400 PER DRUM, $750 PER CUBIC YARD OF HAZARDOUS SOIL, AND $57 PER ADDITIONAL CUBIC YARD OF SOIL WITH LOW LEVEL CONTAMINATION.

ALTERNATIVE 5: LIMITED EXCAVATION/CONTAINMENT

PORTIONS OF THE FILL AREA OF THE FDDS WOULD BE EXCAVATED TO REMOVE PREVIOUSLY IDENTIFIED DRUMS. APPROXIMATELY SIX TRENCHES WOULD BE DUG TO LOCATE ADDITIONAL DRUMS. ALL DRUMS FOUND AND ANY ASSOCIATED CHARACTERISTICALLY HAZARDOUS SOIL WOULD BE REMOVED AND MANAGED IN ACCORDANCE WITH FEDERAL LAND DISPOSAL RESTRICTIONS AND WISCONSIN WASTE MANAGEMENT GUIDELINES. BECAUSE OF THE UNKNOWN NATURE OF THE WASTES BURIED AT THE SITE, WASTE CHARACTERIZATION WILL BE NECESSARY TO DETERMINE THE APPROPRIATE METHOD FOR HANDLING EXCAVATED MATERIALS. IN ACCORDANCE WITH THE WISCONSIN "INTERIM POLICY FOR PROMOTING THE IN-STATE AND ON-SITE MANAGEMENT OF HAZARDOUS WASTES IN THE STATE OF WISCONSIN", THERE WILL BE A PREFERENCE FOR RECYCLING HAZARDOUS WASTES REMOVED FROM THE SITE. IF RECYCLING IS DETERMINED NOT TO BE FEASIBLE, THE WASTE WILL BE TREATED WITH ANY RESIDUALS DISPOSED OF OFF-SITE. IF DRUM CONTENTS PROVE TO BE NON-HAZARDOUS, THE WASTE WOULD BE PLACED OFF-SITE IN A RCRA SUBTITLE D DISPOSAL FACILITY.

UNDER THIS ALTERNATIVE, ONE OF TWO CAP SYSTEMS WOULD BE INSTALLED OVER THE REMAINING WASTE AT THE SITE. DESCRIPTIONS OF CAP A AND CAP B ARE PROVIDED UNDER THE DESCRIPTION OF ALTERNATIVE 3 (CONTAINMENT). BOTH CAPS WOULD PROVIDE A BARRIER BETWEEN THE GROUND SURFACE AND THE WASTE TO PREVENT DIRECT CONTACT. EACH CAP ALSO REQUIRES A HYDRAULIC CONDUCTIVITY IN THE LOW PERMEABILITY LAYER OF NOT MORE THAN 1 X (10-7), WHICH WOULD LIMIT WATER INFILTRATION.

AS IN ALTERNATIVE 3, A LEACHATE COLLECTION TRENCH WOULD ALSO BE CONSTRUCTED AS PART OF THE CAP. THE TRENCH WOULD SERVE AS A MEANS TO MONITOR CAP EFFECTIVENESS AND WOULD INCLUDE THE CAPACITY TO STORE AND REMOVE ANY COLLECTED LIQUIDS SHOULD THE LIQUIDS BE CONTAMINATED. IF WISCONSIN PALS ARE EXCEEDED, LEACHATE WOULD BE DISPOSED OF APPROPRIATELY TO A POTW OR RCRA TREATMENT FACILITY.

ALTHOUGH NOT IN A REGULATORY FLOODPLAIN, THE 100-YEAR FLOOD ELEVATION WOULD REACH THE TOE OF THE CONTAINMENT. TO COMPLY WITH RELEVANT AND APPROPRIATE FLOODPLAIN REQUIREMENTS, THE TOE OF THE CONTAINMENT WOULD BE ARMORED TO PREVENT WASHOUT.

OTHER COMPONENTS OF THIS ALTERNATIVE ARE INSTALLATION OF A FENCE AROUND THE SITE, INSTITUTIONAL CONTROLS, AND A PROGRAM TO MONITOR GROUNDWATER, SURFACE WATER AND THE CONDITION OF THE CAP. THE COSTS PRESENTED BELOW ASSUME THAT 50 DRUMS CONTAINING HAZARDOUS MATERIALS WOULD BE EXCAVATED AND INCINERATED OFF SITE.

TIME TO IMPLEMENT: ONE CONSTRUCTION SEASON
(SPRING, SUMMER, FALL)

ESTIMATED COST:

CAP A -	CAPITAL:	$ 1.9 MILLION
	O&M:	$ 32,100 PER YEAR
	PRESENT NET WORTH:	$ 2.2 MILLION
CAP B -	CAPITAL:	$ 3.8 MILLION
	O&M:	$ 32,100 PER YEAR
	PRESENT NET WORTH:	$ 4.1 MILLION

REMOVAL OF ADDITIONAL MATERIAL WOULD INCREASE COSTS BY APPROXIMATELY $1,400 PER DRUM AND $750 PER CUBIC YARD OF CHARACTERISTICALLY HAZARDOUS SOIL.

ALTERNATIVE 6: IN-SITU VITRIFICATION (ISV)

IN-SITU VITRIFICATION WOULD BE USED TO TREAT CONTAMINANTS IN THE FILL AREA. ISV USES ELECTRICALLY GENERATED HEAT TO VIRTUALLY MELT THE SOIL. THE HIGH TEMPERATURE GENERATED IN THE PROCESS (2,900 DEGREE FAHRENHEIT TO 3,600 DEGREE FAHRENHEIT) DESTROYS MANY CONTAMINANTS. ONCE THE SOIL COOLS, CONTAMINANTS WHICH WERE NOT DESTROYED BY THE HEATING PROCESS ARE IMMOBILIZED IN THE RESULTING GLASS-LIKE MATERIAL. ONCE THE ISV HAS BEEN COMPLETED, A SOIL COVER WOULD BE PLACED OVER THE TREATED AREA. OTHER COMPONENTS OF THIS ALTERNATIVE ARE INSTITUTIONAL CONTROLS TO LIMIT FUTURE SITE USE AND A 30-YEAR PROGRAM TO MONITOR GROUNDWATER AND SURFACE WATER.

THIS ALTERNATIVE WILL EFFECTIVELY REMOVE THE SOURCE OF CONTAMINATION, THUS ELIMINATING THE DIRECT CONTACT THREAT AND THE CAUSE OF GROUNDWATER CONTAMINATION.

TIME TO IMPLEMENT: SEVEN YEARS

ESTIMATED COST:

CAPITAL:	$ 63.3 MILLION
O&M:	$ 22,700 PER YEAR
PRESENT NET WORTH:	$ 63.5 MILLION

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8.0 COMPARATIVE ANALYSIS OF ALTERNATIVES: THE NINE CRITERIA

IN ACCORDANCE WITH THE NCP, THE RELATIVE PERFORMANCE OF EACH ALTERNATIVE IS EVALUATED USING THE NINE CRITERIA (SECTION 300.430(E)(9)(III)) AS A BASIS FOR COMPARISON. AN ALTERNATIVE PROVIDING THE "BEST BALANCE" OF TRADEOFFS WITH RESPECT TO THE NINE CRITERIA IS DETERMINED FROM THIS EVALUATION.

A. THRESHOLD CRITERIA

1. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS CRITERION ADDRESSES WHETHER A REMEDY PROVIDES ADEQUATE PROTECTION AND DESCRIBES HOW RISKS POSED THROUGH EACH PATHWAY ARE ELIMINATED, REDUCED OR CONTROLLED THROUGH TREATMENT, ENGINEERING CONTROLS, OR

INSTITUTIONAL CONTROLS.

ALTERNATIVES 3 THROUGH 6 WOULD PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH OVER TIME. ALTERNATIVE 1 WOULD NOT BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT IN THAT IT DOES NOTHING TO REDUCE CURRENT AND FUTURE EXPOSURE TO SITE CONTAMINANTS. ALTERNATIVES 3 AND 5 PROVIDE PROTECTION AGAINST WATER INFILTRATION, WHICH WOULD REDUCE THE POTENTIAL FOR RELEASE OF CONTAMINANTS TO THE GROUNDWATER. THE CAPS IN ALTERNATIVES 3 AND 5 WOULD ALSO SERVE TO PROTECT AGAINST CONTACT WITH WASTE MATERIALS. ALTERNATIVE 4 WOULD EXCAVATE CONTAMINANTS TO SAFE LEVELS, THEREBY VIRTUALLY ELIMINATING THE SOURCE OF GROUNDWATER CONTAMINATION AND THE SOURCE OF RISK. ALTERNATIVE 5 WOULD EXCAVATE A PORTION OF THE WASTE AT THE SITE, THEREBY OFFERING LESS RISK TO GROUNDWATER THAN CONTAINMENT ALONE. ALTERNATIVE 6 WOULD IMMOBILIZE CONTAMINANTS AND ELIMINATE THE POTENTIAL FOR A FUTURE RELEASE OF CONTAMINANTS TO THE GROUNDWATER.

2. COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

THIS CRITERION EVALUATES WHETHER AN ALTERNATIVE MEETS APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS SET FORTH IN FEDERAL, OR MORE STRINGENT STATE ENVIRONMENTAL LAWS PERTAINING TO THE SITE OR PROPOSED ACTIONS.

I. IDENTIFICATION OF ARARS

A. CLOSURE

STATE CLOSURE REQUIREMENTS (CHAPTER NR 600 ET. SEQ., WAC) FOR HAZARDOUS WASTE LANDFILLS ARE NOT APPLICABLE TO THIS SITE, BECAUSE THE SITE WAS ORIGINALLY CLOSED PRIOR TO THE EFFECTIVE DATE OF THESE REGULATIONS. THE EXISTING LANDFILL COVER DOES NOT MEET THE REQUIREMENTS OF SECTION NR 506.08 OR SECTION NR 504.07, WAC, THE CURRENT STATE SOLID WASTE LANDFILL CLOSURE REQUIREMENTS. THESE REQUIREMENTS ARE APPLICABLE TO THE SITE. IN PART, SECTION NR 504.07, WAC, REQUIRES THAT THE CAP BE COMPOSED OF A 2-FOOT LAYER OF COMPACTED CLAY OVERLAIN BY A FROST-PROTECTIVE SOIL LAYER. CAPS A AND B CONSIDERED IN ALTERNATIVES 2 AND 4 MEET THE REQUIREMENTS OF SECTION NR 504.07, WAC. CHAPTERS NR 514 AND NR 516, WAC ARE ARARS FOR LANDFILL CAP CONSTRUCTION AND DOCUMENTATION.

SUBTITLE C LANDFILL REQUIREMENTS, WHILE RELEVANT, HAVE BEEN DETERMINED NOT TO BE APPROPRIATE BASED ON THE SPECIFIC CIRCUMSTANCES OF THIS SITE. THIS DETERMINATION WAS MADE BECAUSE OF THE NATURE OF THE SITE AS A SOLID WASTE LANDFILL AND THE KNOWN HAZARDOUS PROPERTIES OF THE WASTE, ITS COMPOSITION AND MATRIX, AND THE NATURE OF THE RELEASES FROM THE SITE. FIRST, SINCE A PORTION OF THE LANDFILL WASTE IS BELOW THE WATER TABLE, THE ADDITIONAL PRECIPITATION INFILTRATION REDUCTION ACHIEVED BY A SUBTITLE C GEOMEMBRANE CAP (VERSUS A CLAY CAP) WILL NOT SIGNIFICANTLY AFFECT THE CONTAMINANT LOADING CAUSED BY IMMERSED WASTE. SECOND, ACCORDING TO AVAILABLE RECORDS, NO RCRA LISTED HAZARDOUS WASTE WAS DISPOSED OF AT THE SITE. THIRD, GROUNDWATER CONTAMINATION APPEARS TO BE LIMITED BECAUSE OF THE THICK, CONTINUOUS LAYER OF CLAY BELOW THE WASTE. FINALLY, THERE IS A VERY LIMITED RELEASE OF HAZARDOUS SUBSTANCES INTO THE GROUNDWATER. FOR THESE REASONS, IT HAS BEEN DETERMINED THAT A SUBTITLE C CAP IS NOT APPROPRIATE IN LIGHT OF THE CIRCUMSTANCES OF THE SITE.

B. GROUNDWATER STANDARDS

1. FEDERAL ARARS

MAXIMUM CONTAMINANT LEVELS (MCLS), AND TO A CERTAIN EXTENT, MAXIMUM CONTAMINANT LEVEL GOALS (MCLGS), THE FEDERAL DRINKING WATER STANDARDS PROMULGATED UNDER THE SAFE DRINKING WATER ACT (SDWA), ARE APPLICABLE TO MUNICIPAL WATER SUPPLIES SERVICING 25 OR MORE PEOPLE. AT THE FDDS, MCLS AND MCLGS ARE NOT APPLICABLE, BUT ARE RELEVANT AND APPROPRIATE, SINCE THE SAND AND GRAVEL AND DOLOMITE AQUIFERS ARE PRESENTLY BEING USED IN THE AREA SURROUNDING THE SITE AND COULD POTENTIALLY BE USED AS A SOURCE FOR DRINKING WATER IN THE AREA OF CONCERN. MCLGS ARE RELEVANT AND APPROPRIATE WHEN THE STANDARD IS SET AT A LEVEL GREATER THAN ZERO (FOR NON-CARCINOGENS), OTHERWISE, MCLS ARE RELEVANT AND APPROPRIATE AT SUPERFUND SITES. THE POINT OF COMPLIANCE FOR MCLS AND MCLGS IS AT THE BOUNDARY OF THE LANDFILLED WASTES OR THROUGHOUT THE PLUME IF WASTES ARE REMOVED FROM THE SITE.

2. STATE ARARS

THE STATE OF WISCONSIN HAS PROMULGATED GROUNDWATER QUALITY STANDARDS IN CH. NR 140, WAC, WHICH ARE APPLIED TO ALL FACILITIES, PRACTICES, AND ACTIVITIES WHICH ARE REGULATED BY THE WDNR AND WHICH MAY AFFECT GROUNDWATER QUALITY IN THE STATE. CHAPTER 160, WIS. STATS., DIRECTS THE WDNR TO TAKE ACTION TO PREVENT THE CONTINUING RELEASE OF CONTAMINANTS AT LEVELS EXCEEDING STANDARDS AT THE POINTS OF STANDARDS APPLICATION. CHAPTER 160 DEALS WITH ALL GROUNDWATER, NOT JUST DRINKING WATER OR POTABLE AQUIFERS. THE GROUNDWATER QUALITY STANDARDS ESTABLISHED ARE PALS AND ESS, WHICH ARE DESCRIBED IN DETAIL IN SECTION NR 140.10, WAC. THE CHEMICALS AT THE SITE WHICH EXCEED THESE STANDARDS ARE DISCUSSED IN SECTION 5.0. PALS AND ESS, CONTAINED IN SECTION NR 140.10, WAC, ARE GENERALLY MORE STRINGENT THAN CORRESPONDING FEDERAL STANDARDS SET FORTH UNDER THE SDWA AND ARE APPLICABLE TO THE FDDS.

CONSISTENT WITH THE EXEMPTION CRITERIA OF SECTION NR 140.28, WAC, A WACL MAY BE ESTABLISHED AS THE CLEAN UP STANDARD IF IT IS DETERMINED THAT IT IS NOT TECHNICALLY AND ECONOMICALLY FEASIBLE TO ACHIEVE THE PAL FOR A SPECIFIC SUBSTANCE. EXCEPT WHERE THE BACKGROUND CONCENTRATION OF A COMPOUND HAS BEEN DETERMINED TO EXCEED THE ES SET FORTH IN NR 140.20, WAC, THE WACL THAT IS ESTABLISHED UNDER SECTION NR 140.28 MAY NOT EXCEED THE ES FOR THAT COMPOUND. IF IT BECOMES APPARENT THAT THE CONTAMINANT LEVEL HAS CEASED TO DECLINE OVER TIME AND IS REMAINING CONSTANT AT A STATISTICALLY SIGNIFICANT LEVEL ABOVE THE PAL (OR ANY WACL ESTABLISHED DUE TO HIGH BACKGROUND CONCENTRATIONS) IN A DISCRETE PORTION OF THE AREA OF ATTAINMENT, AS VERIFIED BY MULTIPLE MONITORING WELLS, US EPA IN CONSULTATION WITH THE STATE WILL RE-EVALUATE GROUNDWATER REMEDIATION ALTERNATIVES TO DETERMINE WHETHER OR NOT IT IS TECHNICALLY OR ECONOMICALLY FEASIBLE TO ACHIEVE THE PAL OR ANY PREVIOUSLY ESTABLISHED WACL.

THE REMEDY WILL ACHIEVE PALS CONTAINED IN SECTION NR 140.10, WAC, UNLESS WACLS ARE ESTABLISHED PURSUANT TO THE CRITERIA IN SECTION NR 140.28, WAC, IN WHICH CASE WACLS WILL BE MET. THESE STANDARDS WILL BE MET IN ACCORDANCE WITH THE NCP, AT THE WASTE BOUNDARY OR THROUGHOUT THE GROUNDWATER PLUME IF WASTES ARE REMOVED FROM THE SITE.

MERCURY WAS DETECTED WITHIN THE WASTE BOUNDARY AT A LEVEL EXCEEDING ESS. ALTERNATIVE 5A QUALIFIES AS A POTENTIAL RESPONSE ACCORDING TO TABLE 6 OF CH. 140, WAC, "RANGE OF RESPONSES FOR EXCEEDANCE OF ENFORCEMENT STANDARDS FOR SUBSTANCES OF HEALTH OR WELFARE CONCERN". IN ADDITION TO MERCURY, SEVERAL OTHER CONTAMINANTS WERE DETECTED IN LEVELS EXCEEDING PALS. ALTERNATIVE 5A ALSO QUALIFIES AS A POTENTIAL RESPONSE ACCORDING TO TABLE 5 OF CH. 140, WAC, "RANGE OF RESPONSES FOR EXCEEDANCE OF A PREVENTIVE ACTION LIMIT FOR INDICATOR PARAMETERS AND SUBSTANCES OF HEALTH AND WELFARE CONCERN."

C. LAND DISPOSAL RESTRICTIONS (LDRS)

ANOTHER SET OF RCRA REGULATIONS WHICH MAY BE AN ARAR AT THE SITE ARE LDRS, 40 CFR PART 268. WASTE WOULD BE MOVED FROM THE SITE IN ALTERNATIVES 4 AND 5 DURING EXCAVATION, TREATMENT AND REDISPOSAL. ALTERNATIVE 4, UNDER THE EXCAVATION AND TREATMENT OPTION, MAY TRIGGER LDR REQUIREMENTS. BECAUSE IT IS KNOWN THAT SOME OF THE DRUMS BURIED AT THE SITE CONTAIN CHARACTERISTIC HAZARDOUS WASTES, LDRS WOULD BE APPLICABLE FOR DISPOSAL OF THOSE WASTES.

II. DISCUSSION

AS DISCUSSED EARLIER, SOLID WASTE CLOSURE, CONSTRUCTION AND DOCUMENTATION STANDARDS ARE ARARS FOR THIS SITE. THE LANDFILL COVERS IN ALTERNATIVES 3 AND 5 MEET CURRENT WISCONSIN REQUIREMENTS FOR SOLID OR HAZARDOUS WASTE LANDFILL CLOSURES. SECTION NR 140, WAC, IS AN ARAR. CONTAINMENT WOULD LIKELY MITIGATE FUTURE RELEASES IN EXCESS OF PALS AT THE WASTE MANAGEMENT BOUNDARY AND BEYOND. ALTHOUGH NO GROUNDWATER TREATMENT ACTIONS ARE EVALUATED IN THE FS, IT IS ESTIMATED THAT GROUNDWATER CONTAMINANT LEVELS WOULD DECREASE TO LEVELS THAT COMPLY WITH WISCONSIN GROUNDWATER STANDARDS BY REDUCING THE INFILTRATION OF WATER INTO THE WASTE. UNDER ALTERNATIVE 1, WATER WOULD CONTINUE TO INFILTRATE AT ITS PRESENT RATE. ALTERNATIVE 3 WOULD SIGNIFICANTLY REDUCE INFILTRATION. ALTERNATIVE 4 WOULD BE EFFECTIVE IN THAT IT WOULD VIRTUALLY ELIMINATE THE SOURCE OF GROUNDWATER CONTAMINATION. ALTERNATIVES 5A AND 5B WOULD ELIMINATE THE PRINCIPAL THREAT TO THE MAXIMUM EXTENT PRACTICABLE AND CAP THE FILL AREA TO SIGNIFICANTLY REDUCE INFILTRATION INTO REMAINING WASTE. ALTERNATIVE 6 WOULD TREAT THE CONTAMINATED AREA BY VIRTUALLY IMMOBILIZING THE WASTE, THEREBY ELIMINATING THE GROUNDWATER CONTAMINATION ROUTE.

THE CAPS IN ALTERNATIVES 3 AND 5 WOULD ALSO HELP MINIMIZE ANY FUTURE RISKS FROM THE SITE. THE CAP, IF

MAINTAINED, WOULD PREVENT FUTURE DIRECT CONTACT WITH CONTAMINANTS AND REDUCE INFILTRATION WHICH WOULD MINIMIZE ANY FUTURE RELEASES INTO THE GROUNDWATER FROM THE SITE. IT IS EXPECTED THAT CAPPING WOULD RESULT IN FUTURE COMPLIANCE WITH WISCONSIN STATUTES WHICH REQUIRE THAT FUTURE RELEASES OF CONTAMINANTS NOT EXCEED STATE GROUNDWATER QUALITY STANDARDS.

B. PRIMARY BALANCING CRITERIA

3. LONG-TERM EFFECTIVENESS/PERMANENCE

THIS CRITERION DELINEATES THE RESIDUAL RISK AND EVALUATES THE ABILITY OF AN ALTERNATIVE TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME, ONCE CLEANUP OBJECTIVES HAVE BEEN MET.

UNDER ALTERNATIVE 1 (NO ACTION), PROTECTION FROM DIRECT EXPOSURE WOULD NOT BE ACHIEVED AND WATER INFILTRATION WOULD NOT BE REDUCED. ALTERNATIVES 3 AND 5 WILL PROVIDE ADEQUATE PROTECTION ASSUMING THE CAP IS MAINTAINED. THIS IS BECAUSE ALTERNATIVES 3 AND 5 REMOVE THE DIRECT CONTACT THREAT AND REDUCE WATER INFILTRATION INTO THE DISPOSAL AREA. HOWEVER, THE LONG-TERM EFFECTIVENESS AND PERMANENCE OF ALTERNATIVES 3 AND 5 ARE DEPENDENT ON PROPER MONITORING AND UPKEEP OF THE CONTAINMENT SYSTEM. ALTERNATIVES 4 WOULD BE EFFECTIVE IN THE LONG TERM IN THAT ONLY SAFE LEVELS OF CONTAMINATION WOULD BE LEFT ON SITE. ALTERNATIVE 6 WOULD DESTROY OR IMMOBILIZE CONTAMINANTS AT THE SITE, THEREBY OFFERING A VIRTUAL PERMANENT REMEDY.

4. REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT

THIS CRITERION EVALUATES THE ANTICIPATED PERFORMANCE OF THE TREATMENT TECHNOLOGIES A REMEDY MAY EMPLOY.

ALTERNATIVES 1 AND 3 WOULD NOT REDUCE THE TOXICITY, MOBILITY, OR VOLUME OF CONTAMINANTS THROUGH TREATMENT. THESE ALTERNATIVES DO NOT MEET THE STATUTORY PREFERENCE FOR TREATMENT. ALTERNATIVES 4 THROUGH 6 WOULD REDUCE TOXICITY, MOBILITY AND VOLUME THROUGH TREATMENT OR RECYCLING.

5. SHORT-TERM EFFECTIVENESS

SHORT-TERM EFFECTIVENESS ADDRESSES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION AND ANY ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY BE POSED DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD.

ALTERNATIVE 3 WOULD INVOLVE MOVING A SMALL AMOUNT OF WASTE AT THE SITE FOR CONSTRUCTION OF THE CAP. MINIMAL RISKS TO NEARBY RESIDENTS POSED BY DUST FROM DIGGING DURING THE IMPLEMENTATION OF ALTERNATIVE 3 WOULD BE CONTROLLED THROUGH STANDARD DUST CONTROL MEASURES. HEALTH RISKS TO WORKERS WOULD BE MINIMIZED WITH PROTECTIVE EQUIPMENT. THERE WOULD BE A FENCE AROUND THE SITE DURING CONSTRUCTION ACTIVITIES WHICH WILL PROTECT NEARBY RESIDENTS. THIS FENCE WOULD REMAIN AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED. ALTERNATIVE 4 INVOLVES FULL EXCAVATION OF DRUMS AND CONTAMINATED SOIL AND DEBRIS. ALTERNATIVE 5 INVOLVES LIMITED EXCAVATION OF DRUMS AND ASSOCIATED CHARACTERISTICALLY HAZARDOUS SOIL. ALTERNATIVE 6 WOULD USE ISV TO TREAT THE CONTAMINANTS AT THE SITE. ALTERNATIVES 4 AND 5 POSE SHORT-TERM RISKS STEMMING FROM POSSIBLE SIGNIFICANT MOVEMENT OF WASTE MATERIAL, WITH THE PRIMARY RISK BEING THE POTENTIAL EXPLOSIVE HAZARD POSED BY DRUM REMOVAL. ALTERNATIVE 4 WOULD POSE SIGNIFICANTLY MORE SHORT-TERM RISK THAN ALTERNATIVE 5 BECAUSE OF THE VOLUME OF WASTE AND FILL THAT WOULD REQUIRE EXCAVATION. USE OF ISV (ALTERNATIVE 6) IN AN AREA WITH BURIED DRUMS NEAR THE SURFACE ALSO POSES POTENTIAL EXPLOSIVE HAZARDS. HOWEVER, THE EXPLOSIVE HAZARDS AND ANY DUST AND NOISE NUISANCES WOULD BE MITIGATED WITH STANDARD SAFETY PROGRAMS, SUCH AS FENCING, USE OF PROTECTIVE EQUIPMENT, MONITORING AND DUST CONTROL MEASURES. STANDARD METHODS FOR MINIMUM DISTURBANCE OF THE WASTE AND FOR PREVENTION OF INFILTRATION, SUCH AS PLACING A TARP OVER EXPOSED AREAS, WILL ALSO BE EMPLOYED. ALL ALTERNATIVES WITH THE EXCEPTION OF ALTERNATIVE 6 COULD BE COMPLETED IN ONE CONSTRUCTION SEASON. ALTERNATIVE 6 WOULD REQUIRE 7 YEARS TO COMPLETE CLEANUP AT THE SITE.

IT IS UNKNOWN HOW LONG BEFORE GROUNDWATER STANDARDS WILL BE MET IN THE AQUIFER. GROUNDWATER QUALITY WILL BE EVALUATED DURING THE MONITORING PROGRAM TO DETERMINE IF IT IS IMPROVING OR REMAINING THE SAME. THE MONITORING PROGRAM IS EXPECTED TO CONTINUE FOR AT LEAST 30 YEARS.

6. IMPLEMENTABILITY

THIS CRITERION CONSIDERS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF IMPLEMENTING AN ALTERNATIVE, INCLUDING THE AVAILABILITY OF MATERIAL AND SERVICES NEEDED TO IMPLEMENT A PARTICULAR OPTION.

ALTERNATIVES 3 THROUGH 6 ARE TECHNICALLY FEASIBLE. ALTERNATIVES 3 AND 5 UTILIZE TRADITIONAL TECHNOLOGIES (CAPPING, EXCAVATION/CAPPING) AND WOULD BE EASILY IMPLEMENTABLE AT THE SITE. ALTERNATIVE 4, "CLEAN CLOSURE," WOULD BE DIFFICULT TO IMPLEMENT BECAUSE OF THE LARGE VOLUME OF FILL THAT IS POTENTIALLY CONTAMINATED AND CONTAINS DRUMS. ALTERNATIVE 6, ISV, WOULD BE EXTREMELY DIFFICULT, IF NOT IMPOSSIBLE TO IMPLEMENT, AT THE SITE. THE FDDS CONTAINS A LARGE VARIETY OF DEBRIS (INCLUDING CONCRETE, REBAR, PAINT CANS, ETC.). DRUMS MAY ALSO BE BURIED NEAR THE SURFACE. ISV IS NOT RECOMMENDED FOR SITES WITH DEEP FILL AREAS CONTAINING SUCH DIVERSE WASTE MATERIALS.

7. COST

COSTS INCLUDE THE ESTIMATED CAPITAL AND OPERATION AND MAINTENANCE (O & M) COSTS, AS WELL AS PRESENT-WORTH COSTS. THESE COSTS FOR EACH ALTERNATIVE ARE PRESENTED IN TABLE 4.

C. MODIFYING CRITERIA

8. STATE ACCEPTANCE

WDNR CONCURS WITH THE SELECTED ALTERNATIVE.

9. COMMUNITY ACCEPTANCE

COMMUNITY ACCEPTANCE IS ASSESSED IN THE ATTACHED RESPONSIVENESS SUMMARY. THE RESPONSIVENESS SUMMARY PROVIDES A THOROUGH REVIEW OF THE PUBLIC COMMENTS RECEIVED ON THE PROPOSED PLAN, AND THE AGENCY'S RESPONSES TO THOSE COMMENTS.

#SR
9.0 THE SELECTED REMEDY

BASED UPON CONSIDERATION OF THE REQUIREMENTS OF CERCLA, AS AMENDED BY SARA, AND THE NCP, THE DETAILED ANALYSIS OF ALTERNATIVES AND PUBLIC COMMENTS, US EPA AND WDNR HAVE SELECTED ALTERNATIVE 5A -- LIMITED EXCAVATION OF DRUMS AND ASSOCIATED CHARACTERISTICALLY HAZARDOUS SOILS; A NR 504.07, WAC, CAP; INSTITUTIONAL CONTROLS AND GROUNDWATER MONITORING -- AS THE MOST APPROPRIATE REMEDIAL ACTION FOR THE FDDS.

UNDER ALTERNATIVE 5A, THE CAP WILL BE PLACED ON THE SITE IN COMPLIANCE WITH THE CURRENT REQUIREMENTS OF SECTION NR 504.07, WAC FOR CLOSURE OF SOLID WASTE FACILITIES. THE CAP WILL CONSIST OF A GRADING LAYER, A MINIMUM 2-FOOT CLAY LAYER (COMPACTED TO A PERMEABILITY OF 1 X (10-7) CM/S OR LESS), A FROST PROTECTIVE SOIL LAYER AT LEAST 1.5 FEET THICK, AND A MINIMUM 6-INCH TOPSOIL LAYER. THE THICKNESS OF THE SOIL LAYER WILL DEPEND ON THE FROST PENETRATION DEPTH AT THE SITE. A DRAINAGE LAYER MAY ALSO BE INCLUDED AS PART OF THE CAP ON TOP OF THE CLAY LAYER TO ENHANCE DRAINAGE OFF THE CLAY LAYER. TESTING WILL BE CONDUCTED TO ASSURE ALL WASTE IS CONTAINED UNDER THE CAP.

INSTITUTIONAL CONTROLS WILL BE RELIED UPON TO ENHANCE THE EFFECTIVENESS OF THE REMEDY, INCLUDING DEED RESTRICTIONS, WELL INSTALLATION RESTRICTIONS, AND LANDFILL DEVELOPMENT RESTRICTIONS (NR 506). A CYCLONE FENCE WILL ALSO BE INSTALLED AROUND THE SITE. ADDITIONAL GROUNDWATER MONITORING WELLS WILL BE INSTALLED TO MORE FULLY CHARACTERIZE THE GROUNDWATER SYSTEM. NEW AND EXISTING WELLS WILL BE MONITORED FOR AT LEAST 30 YEARS.

THE RISK DUE TO DIRECT CONTACT WITH THE WASTE WILL BE REDUCED IMMEDIATELY AFTER CAP CONSTRUCTION IS COMPLETED. IT IS PROJECTED THAT THE CONTAMINATION PRESENTLY IN THE GROUNDWATER WILL BEGIN TO DECREASE OVER TIME ONCE HOT-SPOT REMEDIATION IS COMPLETE AND THE CAP IS IN PLACE. HOWEVER, GROUNDWATER QUALITY WILL BE EVALUATED DURING THE MONITORING PROGRAM TO DETERMINE IF IT IS IMPROVING OR REMAINING THE SAME. THE GOAL OF THE SOURCE CONTROL ACTION WILL BE TO ATTAIN THE GROUNDWATER CLEAN-UP STANDARDS AT THE WASTE BOUNDARY OF THE FDDS, WHICH IS THE SUGGESTED NCP POINT OF COMPLIANCE FOR GROUNDWATER. THE GROUNDWATER CLEAN UP STANDARDS WHICH HAVE BEEN ESTABLISHED ARE PALS, UNLESS WACLS ARE ESTABLISHED PURSUANT TO THE CRITERIA IN SECTION NR

140.28, WAC, IN WHICH CASE WACLS WILL BECOME THE CLEAN UP STANDARDS.

THE INITIAL REVIEW OF THE GROUNDWATER MONITORING DATA WILL BE CONDUCTED WITHIN FIVE YEARS AFTER THE COMMENCEMENT OF REMEDIAL ACTION. THEREAFTER, THE MONITORING DATA WILL BE REVIEWED AT NO LONGER THAN FIVE-YEAR INTERVALS. IN THE EVENT THAT CONDITIONS AT THE SITE DEGRADE, OR THE REMEDY DOES NOT PROVIDE FOR TIMELY IMPROVEMENT OF GROUNDWATER, THE US EPA AND WDNR WILL CONSIDER ADDITIONAL ACTIONS.

TABLE 5 PRESENTS THE DETAILS OF THE COST FOR THE SELECTED ALTERNATIVE.

10.0 STATUTORY DETERMINATIONS

THE SELECTED REMEDY MUST SATISFY THE REQUIREMENTS OF SECTION 121 (A-E) OF CERCLA, AS AMENDED BY SARA, TO:

A. PROTECT HUMAN HEALTH AND THE ENVIRONMENT;
B. COMPLY WITH ARARS (OR JUSTIFY A WAIVER);
C. BE COST EFFECTIVE;
D. UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE; AND,
E. SATISFY THE PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT OR PROVIDE AN EXPLANATION AS TO WHY THIS PREFERENCE IS NOT SATISFIED.

THE IMPLEMENTATION OF ALTERNATIVE 5A AT THE FDDS SATISFIES THE REQUIREMENTS OF CERCLA, AS AMENDED BY SARA, AS DETAILED BELOW:

A. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS SELECTED REMEDY PROVIDES ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

IMPLEMENTATION OF THE SELECTED ALTERNATIVE WILL REDUCE AND CONTROL POTENTIAL RISKS TO HUMAN HEALTH AND THE ENVIRONMENT POSED BY EXPOSURE TO SITE CONTAMINANTS AND WILL REDUCE THE INFLUENCE OF SITE AS A SOURCE OF GROUNDWATER CONTAMINATION. SINCE GROUNDWATER CONTAMINANT LOADING WILL BE REDUCED DUE TO THE REMOVAL OF A PORTION OF THE WASTE AND THE DECREASED INFILTRATION OF WATER THROUGH THE CAP, GROUNDWATER QUALITY IS EXPECTED TO IMPROVE OVER TIME.

NO UNACCEPTABLE SHORT-TERM RISKS WILL BE CAUSED BY THE IMPLEMENTATION OF THE REMEDY. THE COMMUNITY AND SITE WORKERS MAY BE EXPOSED TO EXPLOSIVE HAZARDS FROM EXCAVATION OF DRUMS AND TO DUST AND NOISE NUISANCES DURING CONSTRUCTION OF THE CAP. STANDARD SAFETY PROGRAMS, SUCH AS FENCING, USE OF PROTECTIVE EQUIPMENT, MONITORING AND DUST CONTROL MEASURES, SHOULD MITIGATE ANY SHORT-TERM RISKS. STANDARD METHODS FOR MINIMUM DISTURBANCE OF THE WASTE AND FOR PREVENTION OF INFILTRATION, SUCH AS PLACING A TARP OVER EXPOSED AREAS, WILL ALSO BE EMPLOYED.

B. COMPLIANCE WITH ARARS

THE SELECTED REMEDY WILL COMPLY WITH ALL FEDERAL AND STATE ARARS. THE FOLLOWING ARARS WILL BE ATTAINED.

1. CHEMICAL-SPECIFIC ARARS

CHEMICAL-SPECIFIC ARARS REGULATE THE RELEASE TO THE ENVIRONMENT OF SPECIFIC SUBSTANCES HAVING CERTAIN CHEMICAL CHARACTERISTICS.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

- CH. NR 140, WAC, AND CH. 160, WISCONSIN STATUTES.
- SDWA MCLS AND MCLGS

2. LOCATION-SPECIFIC ARARS

LOCATION-SPECIFIC ARARS ARE THOSE REQUIREMENTS THAT RELATE TO THE GEOGRAPHICAL POSITION OF A SITE.

APPLICABLE REQUIREMENTS

- 40 CFR PART 6 APPENDIX A SETS FORTH US EPA POLICY FOR CARRYING OUT THE PROVISIONS OF EXECUTIVE ORDERS 11988 (FLOODPLAIN MANAGEMENT) AND 11990 (PROTECTION OF WETLANDS). IT REQUIRES ACTION TO AVOID OR MINIMIZE ADVERSE IMPACTS ON WETLANDS, AND TO PRESERVE AND ENHANCE THE NATURAL VALUES OF WETLANDS AND FLOODPLAINS.

3. ACTION-SPECIFIC ARARS

ACTION-SPECIFIC ARARS ARE REQUIREMENTS THAT DEFINE ACCEPTABLE TREATMENT AND DISPOSAL PROCEDURES FOR HAZARDOUS SUBSTANCES.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

- LAND DISPOSAL RESTRICTIONS (LDR), 40 CFR PART 268

- SOLID WASTE LANDFILL CLOSURE REQUIREMENTS OF CH. NR 504, 506, 514 AND 516, WAC. REGULATES THE DESIGN, OPERATION, CONSTRUCTION AND DOCUMENTATION OF LANDFILLS.

- CH. NR 600 ET. SEQ., WAC. REGULATES MANIFESTING, TRANSPORT, RECYCLING, MANAGEMENT, AND DISPOSAL OF EXCAVATED HAZARDOUS WASTE.

- ADDITIONAL STATE ACTION-SPECIFIC ARARS CAN BE FOUND IN THE FS REPORT.

"TO BE CONSIDERED" REQUIREMENTS

- CERCLA OFF-SITE POLICY. (MAY 12, 1986), REVISED NOVEMBER 13, 1987, OSWER DIR. 9834.11.

- WISCONSIN "INTERIM POLICY FOR PROMOTING THE IN-STATE AND ON-SITE MANAGEMENT OF HAZARDOUS WASTES IN THE STATE OF WISCONSIN" PROVIDES A PRIORITIZATION OUTLINE FOR THE TREATMENT AND DISPOSAL OF HAZARDOUS WASTES AND IS A "TO-BE-CONSIDERED" FOR THE SITE.

C. COST EFFECTIVENESS

A COST-EFFECTIVE REMEDY IS ONE FOR WHICH THE COST IS PROPORTIONAL TO THE REMEDY'S OVERALL EFFECTIVENESS. TABLE 4 LISTS THE COSTS ASSOCIATED WITH THE IMPLEMENTATION OF ALTERNATIVES 1 THROUGH 6. TABLE 5 PROVIDES A DETAILED BREAKDOWN OF THE COSTS ASSOCIATED WITH THE SELECTED ALTERNATIVE.

ALTERNATIVE 5A AFFORDS A HIGH DEGREE OF EFFECTIVENESS BY EXCAVATING AND TREATING A PORTION OF THE PRINCIPAL THREAT, PROVIDING PROTECTION FROM EXPOSURE TO REMAINING CONTAMINANTS IN THE WASTE AND MINIMIZING THE INFILTRATION OF WATER INTO THE REMAINING WASTE. CLEAN CLOSURE OF THE SITE TO REDUCE SOURCE LEVELS OF CONTAMINATION TO ACCEPTABLE LEVELS (ALTERNATIVE 4) IS GREATER THAN FOUR TIMES THE COST OF LIMITED EXCAVATION WITH A CAP AND DOES NOT PROVIDE A SIGNIFICANT BENEFIT PROPORTIONAL TO ITS COST. ALTHOUGH ALTERNATIVE 3 (CONTAINMENT) IS LESS EXPENSIVE THAN ALTERNATIVE 5A, IT DOES NOT TREAT THE PRINCIPAL THREAT OR SATISFY THE STATUTORY PREFERENCE FOR TREATMENT. ALTERNATIVE 6, ISV, IS PROHIBITIVELY EXPENSIVE AND MAY NOT BE IMPLEMENTABLE DUE TO THE VARIETY OF WASTE AND DEBRIS BURIED AT THE SITE. ALTERNATIVE 5B, WHICH INCLUDES LIMITED EXCAVATION WITH A RCRA SUBTITLE C COMPLIANT CAP WOULD BE MORE EXPENSIVE THAN ITS SOLID WASTE COUNTERPART (5A) AND PROVIDE LIMITED ADDITIONAL BENEFITS. THEREFORE, ALTERNATIVE 5A IS A COST-EFFECTIVE ALTERNATIVE WHICH PROVIDES OVERALL EFFECTIVENESS PROPORTIONAL TO ITS COST.

D. UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

US EPA BELIEVES AND THE STATE OF WISCONSIN CONCURS THAT THE SELECTED REMEDY REPRESENTS THE MAXIMUM EXTENT TO

WHICH PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES CAN BE UTILIZED IN A COST-EFFECTIVE MANNER FOR THE FDDS. OF THE ALTERNATIVES THAT ARE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND COMPLY WITH ARARS, US EPA HAS DETERMINED THAT THE SELECTED REMEDY PROVIDES THE BEST BALANCE OF TRADEOFFS IN TERMS OF LONG-TERM EFFECTIVENESS AND PERMANENCE, REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT, SHORT-TERM EFFECTIVENESS, IMPLEMENTABILITY, COST AND STATE AND COMMUNITY ACCEPTANCE. THE SELECTED REMEDY CAN BE IMPLEMENTED AND COMPLETED MORE QUICKLY WITH LESS DIFFICULTY AND AT LESS COST THAN THE TOTAL EXCAVATION ALTERNATIVE.

THE SELECTED REMEDY REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS AND TREATMENT CAN BE PRACTICABLY UTILIZED FOR THIS ACTION, SINCE THE WASTE MASS POSES A LOW-LEVEL, LONG-TERM THREAT. TO THE EXTENT PRACTICABLE, "HOT SPOTS" ARE BEING ADDRESSED THROUGH EXCAVATION AND REMOVAL OF DRUMS. THE LEVEL OF CONTAMINATION REMAINING ON SITE CAN BE RELIABLY CONTROLLED OVER TIME THROUGH ENGINEERING AND INSTITUTIONAL CONTROLS, AND TREATMENT OF THE ENTIRE FILL AREA IS THEREFORE NOT PRACTICABLE. A CAP PROVIDES ADEQUATE PROTECTION FROM EXPOSURE TO WASTE AND ACTS AS A BARRIER TO PRECIPITATION INFILTRATION, ASSUMING THE CAP IS EFFECTIVELY MAINTAINED.

E. PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE FDDS CONTAINS CONSTRUCTION DEBRIS, SLUDGES AND BURIED DRUMS. THE PRESENCE OF THE BURIED DRUMS HAS BEEN IDENTIFIED AS A PRINCIPAL THREAT BECAUSE OF THE POTENTIAL FOR FURTHER CONTAMINATION OF THE ENVIRONMENT AS THE CONDITION OF THE DRUMS DEGRADES. THEREFORE, THE EXCAVATION OF DRUMS HAS BEEN SELECTED AS THE MOST PRACTICAL WAY TO ADDRESS CONCENTRATED SITE CONTAMINATION. SPECIFIC DECISIONS CONCERNING THE ACTUAL TREATMENT OF THE HAZARDOUS WASTES WILL BE MADE ON A DRUM BY DRUM BASIS, PER WISCONSIN WASTE MANAGEMENT GUIDELINES. THEREFORE, SATISFACTION OF THE PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT OF THE REMEDY IS SATISFIED.

#DSC

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

THE PROPOSED PLAN FOR THE FDDS SITE WAS RELEASED FOR PUBLIC COMMENT ON APRIL 8, 1991. THE PROPOSED PLAN IDENTIFIED ALTERNATIVE 5A WHICH INCLUDES LIMITED EXCAVATION OF DRUMS AND ASSOCIATED CHARACTERISTICALLY CONTAMINATED SOILS, A SOLID WASTE LANDFILL CLAY CAP WITH GROUNDWATER MONITORING AS THE RECOMMENDED ALTERNATIVE. US EPA REVIEWED ALL WRITTEN AND VERBAL COMMENTS SUBMITTED DURING THE PUBLIC COMMENT PERIOD. UPON REVIEW OF THESE COMMENTS, IT WAS DETERMINED THAT NO SIGNIFICANT CHANGES TO THE REMEDY, AS IT WAS ORIGINALLY IDENTIFIED IN THE PROPOSED PLAN, WERE NECESSARY. HOWEVER, BASED ON THE RESPONSE TO PRP COMMENTS, US EPA WOULD LIKE TO NOTE THAT THE SELECTED ALTERNATIVE MAY INCORPORATE SOME CONSOLIDATION OF CONTAMINATED SOIL AND DEBRIS IN AN EFFORT TO MINIMIZE THE EXTENT OF THE CAP AND THE LOSS OF POTENTIALLY USEFUL LAND.